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ABSTRACT

The larger the range of instructional skills, methods, strategies, and models that a teacher has at his or her command, the more skilled the teacher will be in selecting and delivering appropriate instruction, and the better students will learn. Effective teachers make use of a wide range of instructional resources. Research on instruction shows that a variety of instructional strategies and methods should be used to meet the needs of the class and the individuals in it and to achieve the goals of education. Several variables must be considered when choosing the instructional models, strategies, and methods to use in a course, unit, or lesson: objectives and content, sequence, degree of control, interaction pattern, learning style, and practical considerations. (IAH)

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# Making Effective Instructional Choices:

## A Practical Approach

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*by*

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# A. The Components of Instruction

> Teaching is one of those things . . . that everybody thinks he or she can do better than the experts . . . . Teachers can do something and do something: they teach. Like any other professional activity, teaching requires a cultivated ability. To be done exceptionally well, it also requires a special talent and a sense of vocation. There are "born" teachers just as there are "born statesmen" or "born musicians." (Royal Bank, 1989, p. 1)
>
> Teaching--like the practice of medicine--is very much an art, which is to say, it calls for the exercise of talent and creativity. But like medicine, it is also--or should be--a science, for it involves a repertoire of techniques, procedures, and skills that can be systematically studied and described, and therefore transmitted and improved. The great teacher, like the great doctor, is one who adds creativity and inspiration to that basic repertoire. (Silberman, 1966, p. 124)

## Effective Instruction

Effective instruction involves a "teacher's ability to use various ways of teaching according to a variety of learning goals and outcomes" (Glickman, 1990, pp. 81-82). The larger the range of instructional skills, methods, strategies and models that you have at your command, the more skilled you will be in selecting and delivering appropriate instruction, and the better students will learn.

Learning only takes place within the learner; to be meaningful to the learner, instruction should foster personalization of teaching/learning experiences. *Students should be as actively involved in knowledge construction as possible*. As a teacher, you can choose from the remarkably large number of instructional approaches and techniques available; but, students themselves must make the connections between their needs, their background and previous experience, the content being studied, and the manner in which instruction takes place. Well-chosen and effectively-delivered instruction can help students make connections. Effective teaching involves "those teaching decisions about actions, routines, and techniques that increase the decision-making capabilities of students" (Glickman, p. 82). To do this, you should consider: classroom climate, learning style, developmental level, cultural background, academic abilities, special talents or abilities, economic background and previous experience.

Content analysis of literature on effective instruction shows that important variables are classroom management, climate, and student-teacher interactions. The classroom should be "cooperative, cohesive, goal-directed" and the teacher should use a variety of instructional approaches and activities (Wang, Haertel & Walberg, 1990, p. 37).

## Characteristics of Effective Teachers

Porter and Brophy (1988) of the Institute for Research on Teaching, Michigan State University, say good teaching is essential to effective schooling. The list *characteristics of effective teachers:*

(a) Effective teachewrs know what they hope to do through instruction.

(b) Goals guide the planning of effective teachers; these are communicated to learners.

(c) Effective teachers combine goals, differentiating and integrating (e.g., academic achievement and socialization.

(d) Effective teachers help students move beyond facts and information acquisition to organizing information and formulating problems for themselves.

(e) Effective instruction provides opportunities for students to be creative, recognize and solve problems and engage in independent projects.

(f) While direct instruction and drill have their place, effective teachers use a range of instructional modes so students can achieve high level and affective outcomes.

(g) Effective teachers welcome feedback, are reflective about their instruction and self-evaluate (pp. 81.82).

*Other characteristics of effective teachers* are:

(h) Effective teachers use a variety of meaningful instructional experiences and tasks (O'Neill, 1988, p. 167).

(i) Effective teachers adapt instruction to the nature of subject matter (Porter & Brophy, 1988, p. 81).

(j) Effective teachers create situations for learners to learn more than facts to solve assigned problems (Porter & Brophy, 1988, p. 81).

(k) Effective teachers select certain teaching strategies and methods to teach facts, skills and procedures and other for concepts, skills and values (Strong, Silver & Hanson, 1988, p. 53).

(l) Effective teachers present instruction in a variety of styles to complement the learning styles of students (Drefs, 1989, p. 99).

## Instruction: Strategies, Methods and Skills

**Teacher Actions.** Instruction includes teachers' actions to: create a climate for learning, plan for delivery, deliver instruction and assess student progress. It involves a body of content, classroom management and the use of teaching models, strategies, methods and skills.

**Instructional Terms: Being Consistent.** The literature on teacher education is inconsistent in its use of instructional terminology. To be logical and consistent, the definitions are proposed for instruction, models, strategies, methods and skills (Figure 1):

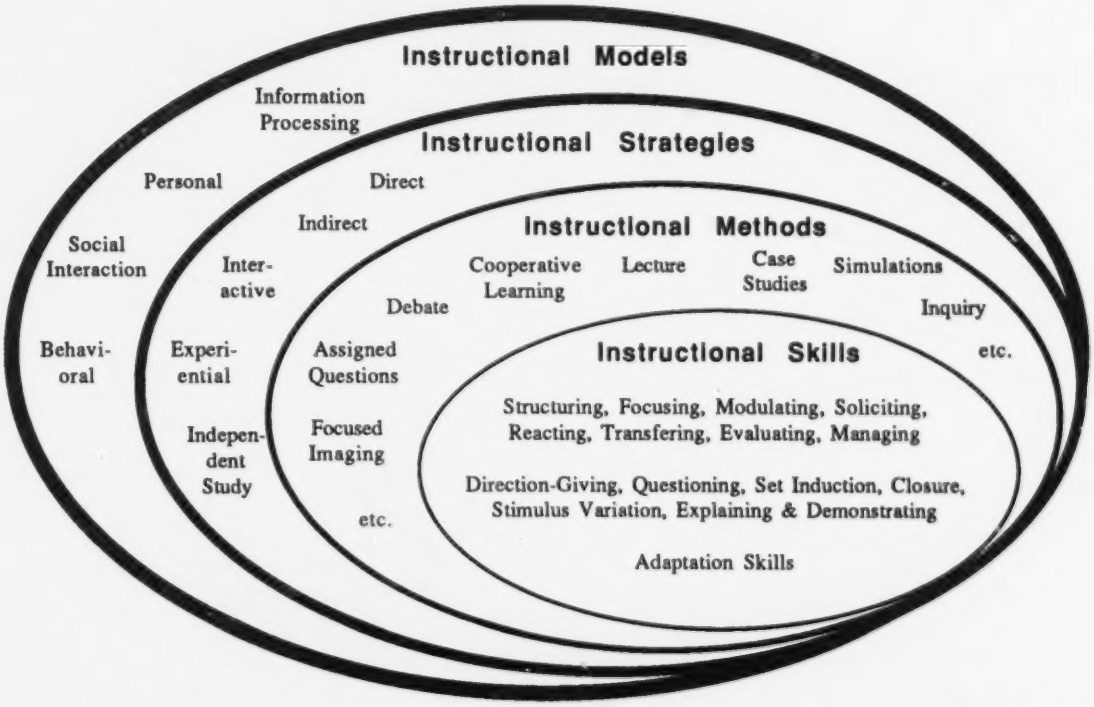
- INSTRUCTION. *Instruction* involves a complex combination of teachers behaviors intended to have learners engage in activities that foster learning. Teacher actions include diagnosing learner needs, motivating, planning units and lessons, using teaching models, strategies, methods and skills, managing the classroom and behavior, applying discipline and assessing and reporting learner progress.

- MODELS: *Models* are broad modes used by the teacher that involve selecting and structuring teaching, strategies, methods, skills and students activities to achieve a particular instructional focus. Models include: *information processing, behavioral, social interaction* and *personal* (Joyce Weil, 1986).

- STRATEGIES: Strategies involves selecting and using teaching methods in a strategic way: direct instruction, indirect instruction, interactive instruction, experiential instruction or individual study.

- SKILLS: Instructional skills are behaviors used by teachers as they use models, strategies and methods. There are three categories of skills: (a) Skills to achieve a particular purpose such as: structuring, focusing, modulating, soliciting, reacting, transferring, evaluating and managing; (b) common daily techniques like: questioning, conducting discussion, giving directions, set induction, closure, explaining, demonstrating and varying the stimulus; and (c) Using resources, print/non-print, in-school/community and technology.

**Figure I**
Instructional Models, Strategies, Methods and Skills




**Approaches to Instruction.** There is a hierarchy of approaches to instruction: an *instructional model* is a broad approach; several teaching methods can be used in an *instructional strategy;* an *instructional method* is a specific approach, and *instructional skills* are daily skills.

**Figure 2**
Instructional Models, Strategies, Methods and Skills

.....

INFOMATION PROCESS is an INSTRUCTIONAL MODEL

DIRECT INSTRUCTION is an INSTRUCTIONAL STRATEGY

LECTURE is an INSTRUCTIONAL METHOD

GIVING DIRECTIONS is an INSTRUCTIONAL SKILL

.....

## Models of Instruction

*Models of instruction* (Joyce & Weil, 1986) include:

- ***Information Processing.*** Emphasizes acquisition, mastery and processing of information and involves intellectual functioning.
- ***Personal.*** Emphasizes the individual development of selfhood. Involves the processes by which individuals build and organize their unique selves. Focus is on building productive relationships with others and the environment and a strong realistic self-concept and developing rich relationships with others.
- ***Social Interaction.*** Emphasizes the relationship of the individual to society or other persons. Priority is on improvement of the ability to relate to others, engagement in democratic processes and work productively in society.
- ***Behavioral.*** Emphasizes changing the visible behavior of learners. Based on stimulus control and reinforcement. Learning tasks are often broken into a series of small, sequenced behaviors.

## Teaching Strategies

You can choose from *five strategic approaches to instruction* (Figure 3):

**Direct Instruction** (lecture, assigned questions, workbooks, speakers, films, VTR, drill, handouts, etc.)

- Normally teacher-centered and deductive. The rule, generalization, skill or process is presented and illustrated with examples. It is often followed by student practice.
- Often is product rather than process centered and stresses "knowing about" more than "knowing how to know."
- Effective for acquiring information or step-by-step skills or introducing other teach strategies and methods.

**Indirect Instruction** (unguided inquiry, guided inquiry, focused imaging, case studies, concept mapping, problem solving, composing, socratic questioning, discovery, etc.)

- Student-centered, "open" and used to help students learn to "think" and achieve affective outcomes. Inductive, it moves from "specifics" to rules or generalizations. Stress is on process more than product. Students explore diverse possibilities, "correct" answer pressure is less, creativity is valued as are interpersonal and social skills.
- The goal is to make students self-sufficient, to "learn to know how to know." Students take part during knowledge-getting and discover concepts and principles to make learning meaningful, thorough and usable as they seek and discover--not passively receive it.
- Teacher control is less and results are less predictable. Teacher role shifts from lecturer/director to facilitator/resource. The teacher arranges the learning environment, provides opportunity for student involvement and provides feedback.

**Experiential Instruction** (hands-on projects, games, simulations, work experiences, fieldtrips, field interviews, role playing, skits, dramatizations, building models of "the real thing," etc.)

- Knowledge is created through experience and reflection. It moves beyond "knowing about" to "knowing how" and to the "ability to do." Personal meaning is constructed and transfer is aided.
- Action-oriented, self-paced and personalizes--students participate in the context being studied. Emphasis is more on process than product.
- Learner-centered, integrated, holistic, indirect, less structure and usually inductive. Learners may work cooperatively. Personalized reflection is needed as are plans to apply learnings to new contexts. Feelings, attitudes, values are critical content and learner needs, culture and learning style can be considered .

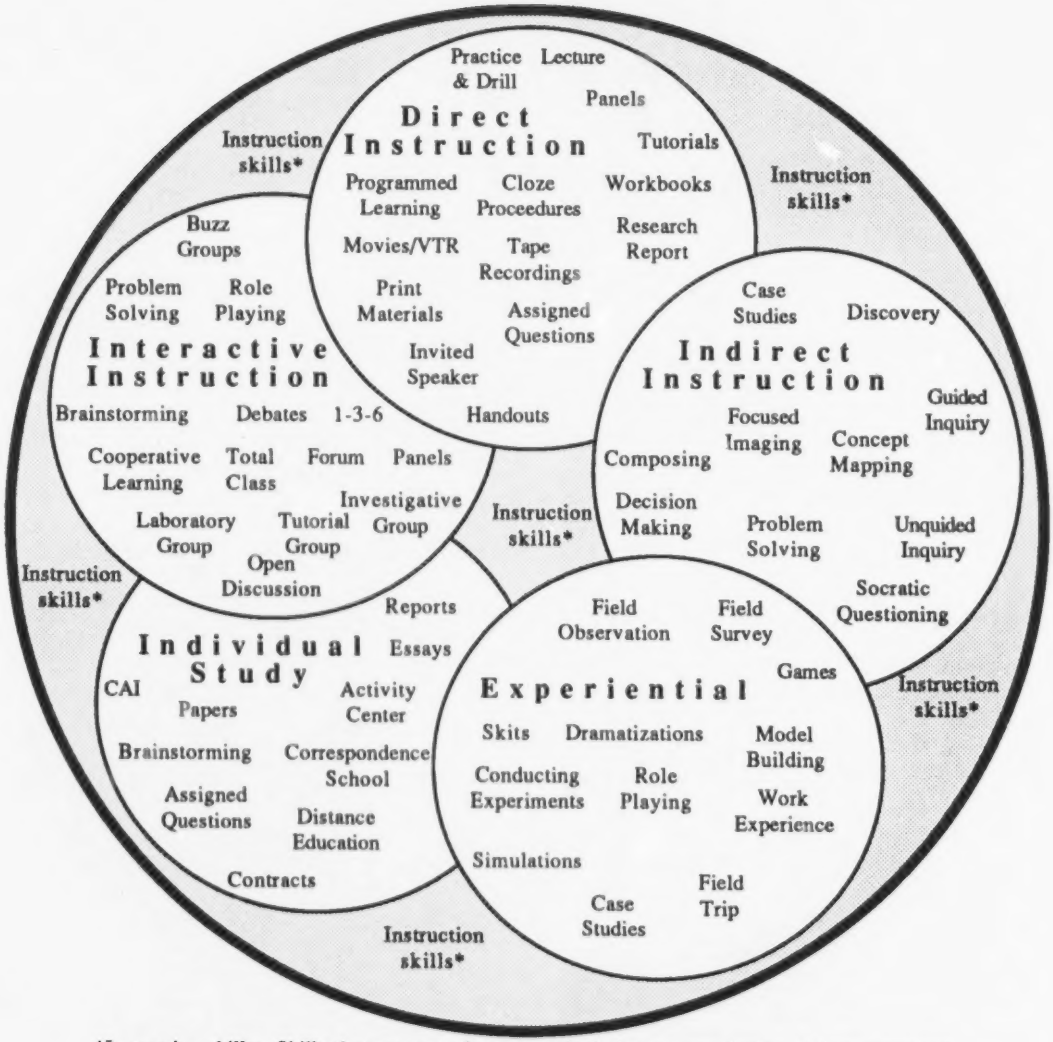
**Interactive Instruction** (discussion [guided or open], question & answer, small group methods, cooperative learning, etc.)

- Student-centered, it relieves heavily on discussion and sharing. Learners learn to react to the ideas, experience, insights and knowledge of the teacher and their peers. Learners can reflect on experience and generate alternative ways of thinking and feeling. Students learn from peers, develop social skills, organize thoughts and develop rational arguments.
- Learner participation is increased and teacher control is less. The teacher controls discussion time, composition and size of groups and reporting techniques. The teacher needs to master observation, listening, and intervention skills and to teach interpersonal and group skills.

**Individual Study** (seatwork, homework, reports, papers, learning centers, correspondence study, CAI, fantasies, constructing models, distance education, LAPs, etc.)

- An educational pursuit carried on by a person to self-improve.
- The purpose is for students to acquire life-long learning capability and to learn to analyze problems, to reflect, make decisions and take purposeful action. Students need to be taught learning strategies (techniques and skills) that can be used throughout life

**Figure 3**
Teaching Strategies and Methods




*Instruction skills: Skills that are part of many methods (e.g.s, questioning & demonstrating)

Several teaching *methods* are subsumed under each *strategy*. The range of choice is remarkably large! While we can categorize teaching strategies and methods, distinctions are not "cut and dried" and teachers often combine strategies. For example, you can provide information through lecture (a direct instruction strategy) but ask students to interpret the significance of the information that was presented (an *indirect instruction* technique). Distinctions are not clear-cut and several methods may fit under two or more strategies.

## Instructional Skills

Effective teachers have command of a host of *instructional skills and processes* that are used every day as part of the instructional models, strategies and methods employed. These are the "technical" skills of teaching that create "experiences for children" that "are not merely valuable, they are *essential* to getting things done" (Noffke & Brennan, 1988, p. 9).

*Instructional skills* can be categorized by: (a) the ***general purpose*** for which they are employed. General instructional skills and processes include: structuring, focusing, modulating, soliciting, reacting, transferring, evaluating and managing (McBeath, 1986). (b) the ***specific instructional behavior a teacher uses.*** Basic instructional skills include: direction-giving, questioning, explaining and demonstrating, stimulus variation, set induction and closure. (c) the kinds of ***resources or technology used.*** Instructional resources include: community resources, media or instructional technology.

The first set of skills is broader than the other two. For example, the skill of "structuring" may involve "direction-giving," "explaining," "demonstrating," "questioning" the chalkboard and an overhead projector.

## Instructional Skills: By General Purpose

**Structuring.** *Structuring* includes planning, arranging and organizing the teaching/learning situation. It occurs when you select objectives, resources, teaching methods, student activities and interaction patterns (the social dimension). Structure may be deductive or inductive (sequence of instruction) and it may be teacher-centered or student-centered (locus of control). Structuring also indicates if goals are attained individually, competitively or cooperatively.

**Focusing.** *Focusing* involves getting and maintaining the attention and interest of learners so that they focus on the objectives of a lesson. It relates to helping students shift attention as the lesson proceeds from one aspect to another. Teacher behaviors include: gestures, movement, voice variation, pauses, eye contact, type or size of print fonts in printed material, use of visuals (including the chalkboard) and questioning. Focusing is done in many ways during a lesson. For example, you can ask students to write down an answer. Or, during questioning, you may pause for three to five seconds after asking a question (to make sure all are thinking about the question) before randomly calling on a particular student to respond.

**Modulating.** *Modulating* refers to the means you use to have students operate at a given cognitive level or standard. It can occur through questioning, the content used in activities, the level of thinking expected and the evaluation process. Modulating can occur as you move from the simple to the complex or known to not yet known. Thus, it has two aspects: (a) setting standards, and (b) varying the level of expectations. These both depend on the content to be learned and the level previously attained by the learners.

**Soliciting.** *Soliciting* involves calling for student responses or asking them to engage in an activity. You solicit through assignments, questions (including prompts, probes and redirects) and projects. Soliciting also occurs when you call for demonstrations of a skill. Pausing is also a soliciting skill since it encourages students to participate covertly or overtly. Setting a positive climate for learning is another way of soliciting student participation.

**Reacting.** *Reacting* refers to your response to student behavior or activity. The main ways you react is by providing feedback (knowledge of results and correctives) and reinforcement.

**Transferring.** *Transferring* refers to the application of one level of learning to another level or application of what was learned in one context to another. Transferring is encouraged when a teacher asks students to apply learnings in a new situation. It frequently is sought during the set and closure portions of a lesson but can occur anywhere in a lesson. It also can be used to link one lesson to another. If you want transfer to occur you should be constantly devising ways to encourage students to transfer learnings to the same subject, to other subjects and to life. Students need to develop personal systems of interrelationships if learnings are to transfer.

**Evaluating.** *Evaluating* is the process through which you find out the amount and kinds of learning that has taken place. It should occur constantly and has (a) ongoing, (b) formative, and (c) summative aspects. Besides formal evaluation such as tests, it makes use of questions, observations, interviews and self-assessments. You, when evaluating, should not merely assess student performance, you also should assess the effectiveness of their teaching.

**Managing.** *Managing* involves setting the stage for learning. It includes your actions to establish and maintain classroom and school rules, routines and procedures and to provide a safe and orderly climate. Effective management is based on an understanding of pupil ego development and motivation.

## Resource Use Skills

There are many alternatives to teacher talk and student reading and writing. A vast, and at times bewildering, array of resources in now available. Increasingly, the question is not whether a resource exists. The problem is finding the resource, determining whether it is appropriate, and deciding how best to use it. Instructional resources include anybody or anything that carries information, stimulates thinking and broadens and extends the experience of learners. Instructional resources are learning media or technology (or tools). Instructional resources are found within and outside the walls of the classroom and school. Effective teachers realize this and make use of a wide range of resources. Resources may be human or material, they may be print or non print and they may be teaching aids or primary media of instruction. They should be aids to teaching rather than substitutes for teaching. Many resources are readily available through the community. Options, you can use include:

- guest speakers
- field trips (e.g.s, museums, art galleries, exhibitions, business plants, legislatures, wildlife preserves)
- field interviews
- work observation or experience
- print or nonprint materials from community sources

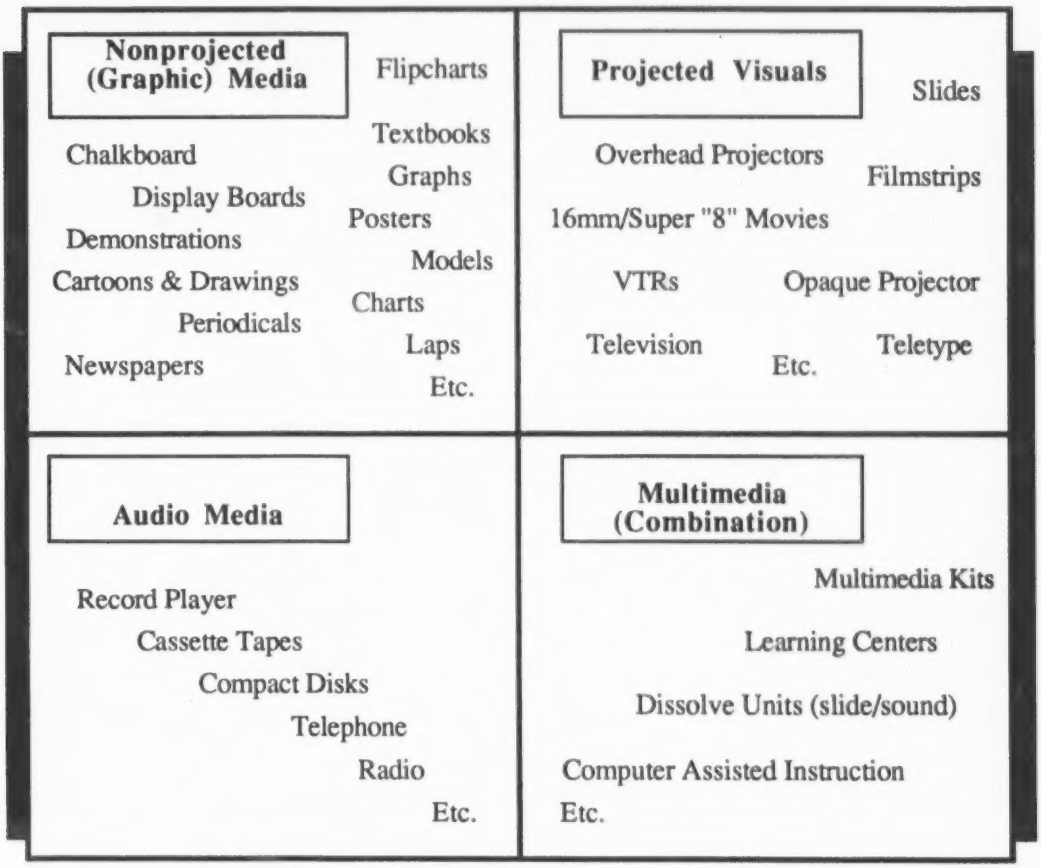
*Community sources* may be:
(a) *public* (for instance, the public library, departments of education, school district media centers, government centers or agencies, crown corporations),
or
(b *private* (for example, private citizens, service clubs, nonprofit organizations, professional associations, commercial publishers, or business firms). Resources can be accessed through personal contact or pick up, the mail, or electronic (telephone, fax, or computer network).

The most common resources are textbook and workbook print resources. Though these may be very good, the danger is that they are adhered to in an inflexible and slavish manner. Texts and workbooks merely are teaching aids.

## Instructional Technology

While the term *"media"* continues to be used, current literature on instructional resources now speaks of educational or *instructional technology*. Technology can be categorized as (Figure 4): nonprojected (graphic) visuals, projected visuals, audio media, and multimedia (or combination audio/visuals), (McNeil & Wiles, 1990)

**Figure 4**
Instructional Technology of Today's Schools




**Technology As a Support to Instruction.** There are still those who believe that technology can substitute for the teacher and that teachers and technology should compete. This, they think, can make schooling more efficient. For instance, computer-assisted instruction can eliminate the need for a teacher and distance education can reduce teacher contact hours; therefore, teacher labor costs can be significantly reduced. We must realize that technology is useful in some portions of the activity of teaching and unsuitable in others. We should "determine the right roles for teachers and the right roles of technology" . . . these roles are not entirely clear and until they are clarified, educational productivity suffers" (Hathaway, 1990, p. 1, 16). Technology has not yet achieved its potential in *supporting* the teaching process.

A caution is warranted. *Technology or media per se do not increase learning!* These merely offer alternatives to teacher presentations or student readings. You can review material presented through technology and, if appropriate, use it to support your presentations or you can have students use the technology. "It is what the teacher does--the teaching--that influences learning. Most of the methods carried by . . . media can also be carried or performed by teachers. . . . We will not find learning differences that can be unambiguously attributed to any medium or instruction" (Clark, 1989, p. 240).

As a part of instructional technology, a vast variety of media are available as alternatives to teacher presentations. Many are high quality and easy to access. At times media-based information and presentation is better than a teacher information and presentation. The difference, one must not forget, is that it adds the critical "human dimension." You can respond to students with sensitivity and precision and you provide new information quickly and effectively.

# B. Making Choices

There is an old saying, *"don't change for the sake of change."* There is another saying,*"variety is the spice of life."* Which of these sage maxims should a teacher follow with respect to instruction given the large variety of models, strategies, methods and student activities that are available? To oversimply--***choose variety!*** What works with one class won't with another; what works with one student won't with another. If you use the same approach all term long you will satisfy some students much of the time and some none of the time. By varying your approach you hit all the students at least some of the time.

## Why Use Different Strategies and Methods?

**A Need for Variety.** Many teachers use little variety in instructional strategies and methods. Goodlad (1983) found teachers tended to impart knowledge while standing or sitting at the front of the room. They used little variety in teaching. The two most frequently used teaching methods are lecture and assigned questions though research on instruction shows that a wide range of instructional strategies and methods is available. The teacher-centered lecture method is not appropriate for much of what is found in a futuristic curriculum. Research on instruction shows that a variety of instructional strategies should be used to meet the needs of the class and the individuals in it and to achieve the goals of education. No one instructional method can be equally effective for all students, and a given instructional method might be appropriate for one group of students but not for another. Henson (1988) suggests that a "good repertoire of methods is essential" for the survival of teachers in the classroom. He states that teachers must know the purposes each strategy serves best (p. 109).

*How something is taught is as important as what is taught.* Instructional strategies should be matched with curriculum content. Effective choice of instructional methods encourages students to become self-reliant, independent, responsible, aware of their limitations and potential, and aware of methods of solving problems. Many learnings students need for the future are best obtained through interactive real life settings (pp. 26-27). Teachers cannot cause or compel learning, but they can create conditions in which it can effectively take place (Goble, 1989, p. 7).

**More Than Telling: Showing and Doing.** The great teacher does not just *tell* since teaching is much more effective when it *shows*; it is even more effective when students *tell as they do*. Wise teachers keep in mind the Chinese saying:

*"I hear and I forget. I see and I remember. I do and I understand."*

The aim of schooling is to produce individuals who can think for themselves and pursue life-long learning; effective teaching extends well beyond "pouring in," it involves "drawing out!" While a "certain amount of didactic learning is necessary to show the student the way," first-class teachers have a "broad and deep range of knowledge . . . [and] seek to ignite in their students an enthusiasm for their subjects by example and leadership. They are more than instructors; they are role models for students. . . . The great teacher inspires" (Royal Bank, 1989, p. 2) and uses a variety of instructional approaches.

**Mode of Representation.** Students can learn through *doing, viewing* or *hearing and reading*. At times you should have students "do." At other times students can "view" (e.g., learn through pictures); at still other times students can "hear" or "read" (e.g., a textbook or lecture). You must be aware of how students process and remember information. While students tend to pass through stages that often can be related to age (Bruner, 1966), there are times when even a grade twelve student needs to "do" or "view" before being ready to "hear" or "read."

Based on students' readiness, you must decide the level of abstraction to use. Students normally need to have experienced something in an enactive (concrete or hands-on) way before they are ready to learn through symbolic representation. They will at least need to recall something concrete to which they can relate concepts that are new. Iconic representation (pictures or other images) can be used if these are based on things with which students have had experience. The progression of enactive, iconic and symbolic is not restricted to young learners. There are times university students will need enactive, or at least iconic, representation before they can learn through symbolic representation (i.e., listening to lectures or reading). A combination of enactive and symbolic (e.g., a class discussion following a field trip) or iconic and symbolic (e.g., a lecture supported by transparencies shown on an overhead projector) is often best.

Another criterion for selecting instruction mode (which is linked to mode of representation) is the degree of learning and the rate of short and long term retention that is needed. Use the best learning senses of students. When teaching strategies and methods are being selected, it is good to keep in mind retention rate as presented in the *learning pyramid* in McNeil and Wiles (1990, p. 202). This depicts *retention rate of learning by instructional medium:*

| | |
|---|---|
| Lecture | 5% |
| Reading | 10% |
| Audio-Visual | 20% |
| Demonstration | 30% |
| Discussion Group | 50% |
| Practice by Doing | 75% |
| Teach Others/Immediate Use of Learning | 90% |

Murgio (1969) reports that *the degree of learning and the level of retention desired* would suggest the use of a wide repertoire of teaching strategies:

Of *what we know* we learn (approximately):

1% through TASTE,
2% through TOUCH,
4% through SMELL,
10% through HEARING, and
83% through SIGHT.

Of *what we learn* we retain (approximately):

10% of what we READ,
20% of what we HEAR,
30% of what we SEE,
50% of what we HEAR AND SEE,
70% of what we SAY, and
90% of what we SAY AS WE DO.

Obviously, *you should use strategies that are congruent with the degree of learning and retention desired.* A consideration all by itself is variety. "Research supports teachers' use of instructional

variety and flexibility as a means of maintaining students attention and increasing achievement" (Gage & Berliner, 1984). Also, a variety of methods is better than extended use of one method (Good & Brophy, 1984).

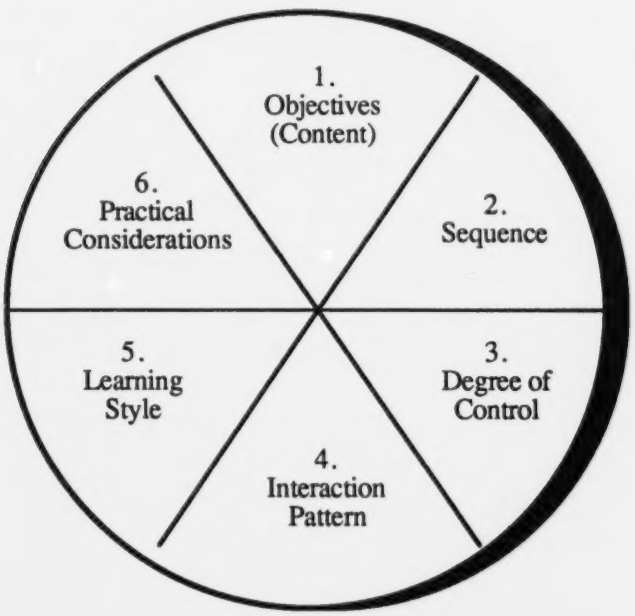
## Making Instructional Choices: The Variables

**Kinds of Variables.** Several variables must be considered when you pick the instructional models, strategies and methods to use in a course, unit or lesson (Figure 5).

The variables are:

1. the outcomes desired (what the learners should know or be able to do);
2. the learning sequence that is appropriate (deductive or inductive);
3. the degree of teacher versus student control;
4. the interaction pattern that is suitable (teacher-student; student-student);
5. the learning styles of students; and,
6. the practical limitations that exist.

**Figure 5**
Variables in Selecting Teaching Methods




Choosing is not an easy matter since, in some situations, not all the variables can be accommodated. Priorities may have to be determined and compromises made. Variables can be

combined in several ways; but, no matter what the combination, *students must be clear about:* the objectives to be achieved, the body of knowledge that is the vehicle for learning, activities that may be used, how the learning product or process is to be demonstrated (evaluated), and application of learnings to new situation. In short, *objectives, instructional methods and activities, and evaluation must always be congruent.*

Merely knowing the variables is insufficient. Other considerations come into play. Sometimes it is desirable to have variety to arouse or maintain student interest. Perhaps, due to developmental stage, or lack of experience, students are not ready to use a given teaching method. At other times, though a teaching method may be best, you may have to consider forces beyond your control. If, for example, evaluation is externally set, for the sake of congruence (see above) and fairness to students, you may have to "teach to" the evaluation.

## 1. Content and Desired Outcomes

Content is the vehicle for achieving objectives and not an end in and by itself. While content includes information and performance skills it also includes the common essential learnings such as interpersonal capability and critical thinking capability. Knowledge is not inert, something to be heaped up and occasionally displayed on call in examinations. Content selection must be based on its potential for helping to achieve objectives; and what students learn should, at least potentially, transfer to other situations. The nature of the content and kinds of outcomes to be derived through a course, unit or lesson must be determined. What cognitive, affective and psychomotor outcomes are desired? Is product important? Process? Both? Is the content declarative (information, concepts and generalizations)? Is it procedural (skills and processes)? A combination? Do we want students to perform intelligently in a variety of schooling contexts? In life situations now and after graduating? An escalating criticism of schooling is that there is scant relationship between traditional school learning and the quality of living and working in the community. Studies do not support the contention that there is a positive correlation between good marks in school and success in life or success in an occupation (Burke, 1989; Lang, 1989).

**Different Kinds of Outcomes.** There are different kinds of content and thus outcomes. Teaching and learning often involve attempting to achieve intertwined outcomes. For example the effective teacher who provides instruction in mathematics realizes that "multiplication" is a concept, a skill, and that it arouses feelings. You want students to understand what multiplication is and how it works, to become skilled at multiplying and to see the value of learning how to multiply. Any given activity can be used to achieve two or more outcomes. The kind of outcome(s) and the teaching strategy(s) chosen should match. *Outcome categories* (kinds of content) 0are:

1. Facts and Information
2. Concepts
3. Learning Generalizations
4. Step-By-Step Psychomotor Skills
5. Step-By-Step Cognitive Skills
6. Thinking Skills
7. Critical Thinking, Problem-Solving, and Decision-Making Processes
8. Creative Thinking and Performance
9. Interpersonal and Social Skills
10. Attitudes, Appreciations and Values

## 2. Sequence: Inductive or Deductive

**Defining Deductive and Inductive.** Sherlock Holmes, in the learning and instruction sense, never *deduced* a thing--he *induced!* His "detections" were *inductive* and not *deductive*. A keen observer, Holmes detects clues, pieces these together and determines "whodunit." You can sequence learning in two ways: *deductive* or *inductive*.

Deductive

Generalization (or Rule) ----------> Specific Examples or Activities

Inductive

Specific Examples or Activities ----------> Generalization (or Rule)

In the *deductive sequence* ideas proceed from generalizations, principles, rules, laws, propositions or theories to applications of these to specific instances. In the *inductive sequence* students are presented with information or data and asked to generalize, discover a pattern or draw a conclusion. The *deductive sequence* involves presenting a generalization and then seeking or providing examples of it; the *inductive sequence* moves from examples to discovery, or presentation, of the generalization. Teaching methods tend to have either a *deductive* or *inductive* bent; some methods lend themselves to either sequence. The direct instruction lecture and explicit teaching are often *deductive;* inquiry and small group problem solving tend to be *inductive.*

**Deductive or Inductive?** Both the deductive and inductive approaches are valuable approaches for teaching concepts, generalizations and skills. You must decide that approach given the learning outcomes desired and the composition of the class. When choosing sequence, you should ask:

- How personalized should the learning be? Students must be more accountable and tend to participate more actively when the inductive approach is used.
- Should learning outcomes be "safe" and predictable. The deductive approach is predictable since it is teacher controlled. Unplanned for examples or order in which examples arise occur if the inductive approach is used.
- What depth of understanding and rate or retention is needed? Students tend to understand and remember learnings better when acquired inductively. Teacher have to decide how important this is in light of what will be needed later in the course or other life contexts. Perhaps the material presented can easily be "looked up" if needed later.
- How much time is available to teach the material? Though learning is more personalized and tends to be deeper with greater retention when the inductive approach is use, the deductive approach is faster.

## 3. Control: Student <--> Teacher

**What is Meant by Control?** Control of behavior patterns, learning content and experiences, and other procedures in a classroom can be viewed along a continuum.

Teacher Control <----------> Student Control

*High teacher control* in a classroom exists when you, with little or no input from students, are the one that determines the objectives, content, learning activities, pacing, classroom management rules and procedures, and assessment. High teacher control normally means that students are *passively* involved. *High student control* involves determination of students' needs and previous knowledge of a topic, use of student-selected content and activities and evaluation based on these and carried out in a format determined by students. You may merely be a facilitator and resource person rather than a presenter High student control usually means that students are *actively* involved. In any given classroom, it is possible for control patterns to shift depending on factors such as the nature of the content and the readiness of students to assume more control for their learning.

Some instructional strategies and teaching methods are highly teacher-centered or controlled, for instance direct instruction methods like lecture, assigned questions and explicit teaching. Other teaching strategies and methods are strongly student-centered and controlled, such as inquiry, cooperative learning group investigation and some experiential methods. Still others can be either teacher-controlled or student-controlled and locus of control can even vary during a lesson or unit.

**The Issue of Control.** *How much control over what is learned and how it is learned should students have?* Ethically and legally how much control can teachers relinquish? Can students be trusted to learn diligently what they need to learn?

There is little disagreement that the opinions of students should be sought and valued. Students do not respect or like teachers who scorn or are indifferent to their feelings and judgments. Just knowing that their opinion is considered is motivating. Further, knowing what students think can allow you to make suitable adjustments and to clear up misconceptions students may have. A more complex matter is the amount of voice students should have regarding content, method and evaluation.

Recently there have been strong movements toward: (a) teaching students how to assume more control and trusting them to exercise that control; and, (b) resource-based learning and community involvement in instruction. This reflects the growing conviction that students should become more accountable and participate more actively in their learning.

Factors you can consider when deciding how much control can and should be released to students include:

- promotion of student ownership and motivation that results
- the need for positive classroom management and the degree to which this has been established
- interpersonal and group skills students have acquired
- the degree of student control with which you have learned to be comfortable
- the availability of print and nonprint resources

## 4. Interaction: Individual, Small Group, Whole Class

A major variable is the type of **interaction** used. Interaction can range from the total class, to small groups, and to individuals working alone. Each has an appropriate place and should be used sometimes (see the continuum below).

Cooperative learning, which uses small groups in a specific structure, is an example where this variable is important. Programmed learning could be used to acquire a specific skill; and, buzz groups to arrive at consensus on some issue.

Class Interaction Alternatives

## 5. Learning and Teaching Styles

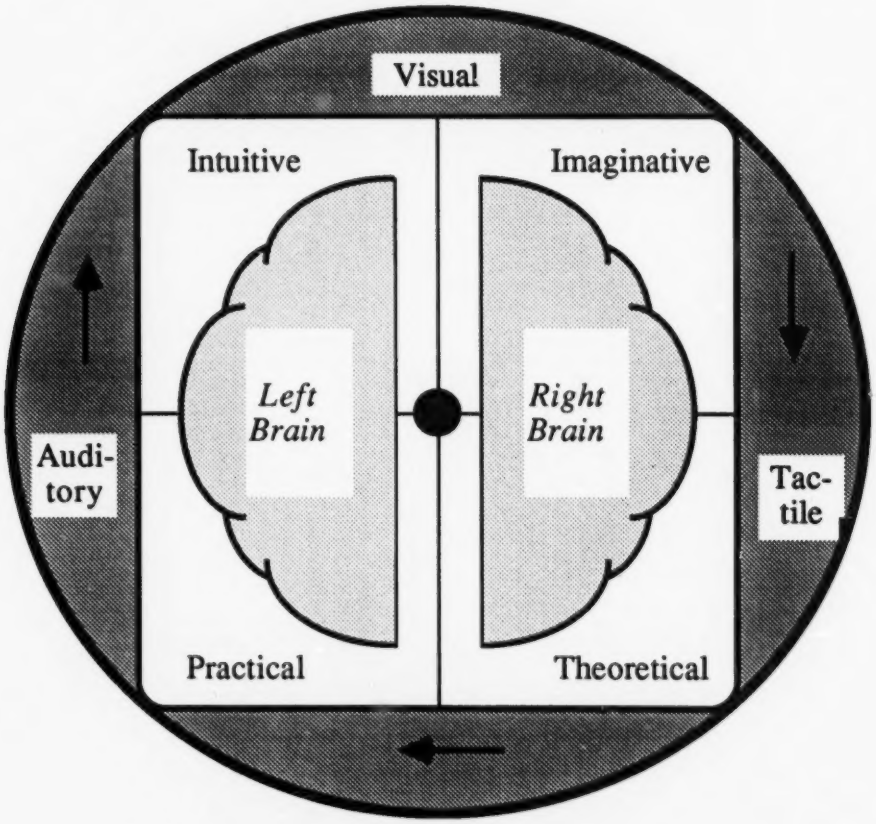
> Styles of learning and thinking are every bit as important as levels of ability . . . we ignore students' thinking styles at our peril--and theirs. . . . Whenever possible, most people choose styles of managing themselves with which they are comfortable (p. 367). It is important to note that *any subject can be taught in a way that is congruent with any style.* (Sternberg, 1990, p. 367)

Whenever we see, experience and interpret, or judge something, we do this from a personal vantage point. This may be very different from that of others. We also have personal preferences when it comes to learning. Preference is affected by our previous experiences, particularly our cultural background. Each of us has a prefered learning style (intuitive, imaginative, theoretical or practical), our hemispheric preference (left brain or right brain) affects how we prefer to learn and we tend to have a visual, auditory or tactile learning modality preference. These are illustrated in Figure 6.

We may organize our thoughts or do things in an orderly, step-by-step way or in an apparently random nonlinear, leaping or "chunking" way; some of us think with our sensory apparatus, some with our hearts or intuition, and some with our intellect (Gregorc, 1982, p. 4). Some people say "show me," others say "tell me" and still others say "let me try it." Some seek cognitive understanding and others need to "feel it in their guts"; some need systematic planning while others like to "wing it" or "go with the flow"; and, some like to work alone and others prefer groups (pp. 4-5). Some welcome new ways of doing things and challenges and others dislike change and prefer familiar approaches and routines (Sternberg, 1990, p. 366).

As Dunn & Dunn (1987) point out, the learning styles of brothers and sisters may be different, styles of parents and children may vary, and styles of marriage partners can be a study in contrast. Every school classroom contains a complex mixture of learning styles; yet, teachers often treat every child the same, often fall into a daily teaching method pattern (or rut), and rarely vary routines and student activities. The research is clear, "students do best when instruction and learning context match their learning style" (pp. 55). "Most children can master the same content; *how* they master it is determined by their individual styles" (Dunn, Beaudry & Klavas, 1989, p. 55).

**Figure 6**
Learning Style, Brain Hemisphericity and Learning Modality




**Defining Learning Style.** Defined in a simple way, *learning style* is the special way a person learns. ***Learning styles*** "are propensities rather than abilities" (Sternberg, p. 366). *Learning style is HOW a student learns, not how well or how much.* It is different from ability. Ideally, you discover the learning style of each student, match these as much as possible, and teach students how to style flex (use other styles). Though you cannot always accommodate learning style differences, a broad repertoire of teaching methods and a variety of student activities can be used. Teachers can foster greater student academic achievement and a decrease of discipline problems if selection of instructional modes recognizes learning style variance (Dunn & Dunn, 1987, p. 55).

No two individuals share identical genetic makeup or life experiences and so no two individuals learn in the same way. While some students have limited ability, perhaps many students now categorized as "poor" could move into an "average" or even "good" category if a variety of teaching methods was used and if individualization of assignments and study modes was allowed. Research shows that the learning of students may be enhanced if teachers accommodate learning style and if students are helped to learn other approaches. Students also share learning similarities. Discovering similarities can help you plan learning activities more effectively.

**Matching Teaching Styles and Learning Styles.** Teachers tend to teach the way they were taught and, given a choice, they tend to teach in harmony with their learning style; but, children of different needs should be taught differently. Henson (1988) reports that studies on matching teaching and learning styles "consistently increases academic achievement, improves attitudes toward school, and reduces discipline problems" (p. 157). He adds that teachers need not always accommodate student preferences. Students should be exposed to a variety of styles (p. 157) and taught how to "style flex" and learn from a variety of teaching and learning modalities.

## 6. Practical Considerations

**Factors in Selecting an Instructional Strategy** are presented below to illustrate what must be considered in selecting and sequencing the teaching methods and strategies that will be used. Picking appropriately is complex and requires careful thought.

- ***Teacher.*** Prepared for use? Suit teaching style?
- ***Time.*** Scheduling allow for choice of certain methods?
- ***Cost.*** To school? To teacher?
- ***Kind of Content.*** Cognitive? Skill or process? Affective? Combination?
- ***Physical Environment.*** Room adaptable? Necessary Equipment?
- ***Students.*** Developmental level? Cognitive, psychomotor, moral or emotional level? Previous experience with content, teaching method? Learning styles?
- ***Interests.*** Motivated? Previous experience or success or failure? Background and interests?
- ***Objectives.*** Most effective way to achieve these? Depth of understanding needed? Need to recall or be able to "do?" Separated or integrated?

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